

ON SOME NEARCTIC SIPHONAPTERA.

By KARL JORDAN.

(With text-figures 65-75.)

THE fleas dealt with under Nos. 1, 2 and 3 were sent to me by Dr. R. Parker, Director of the Rocky Mountain Laboratory, Hamilton, Montana, and the Assistant Parasitologist, Mr. Wm. L. Jellison, to both of whom I express here my gratitude. The types of the new fleas have been returned to Dr. Parker, while one or more paratypes, where available, have been retained at Tring.

1. *Malaraeus penicilliger dissimilis*
subsp. nov. (text-
figs. 65, 66).

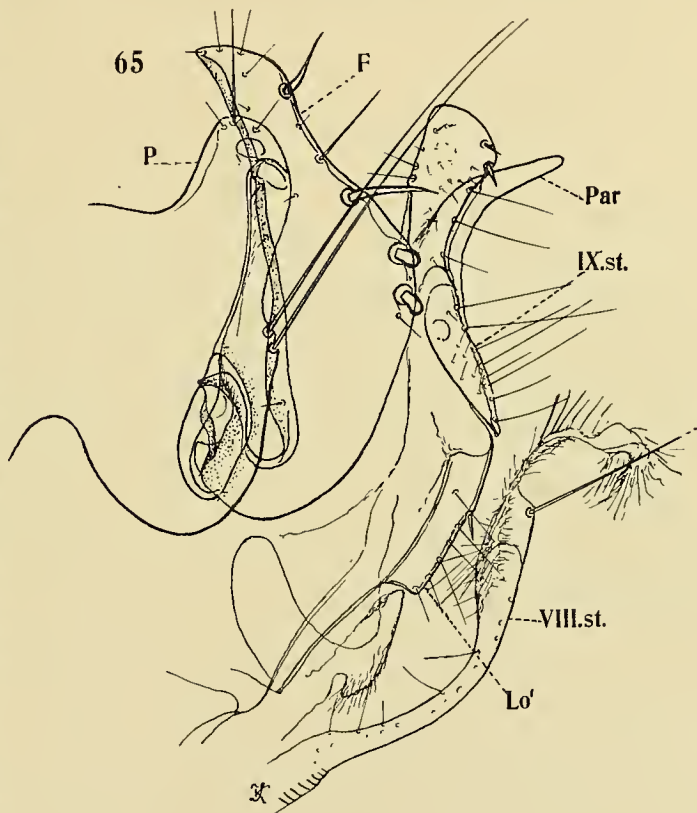
Ceratophyllus penicilliger
(Grube 1852), Jordan,
Nov. Zool., xxxv. p. 36,
no. 24 (1929) (Flat,
Alaska, on *Microtus*).

The species is widely distributed, being known to us from Lapland to the Alps and to the western mountains of Transylvania, and from England to Japan. It has developed into several geographical races, of which we describe here the Alaskan one. A small series is before us as follows :

Alaska : Rapids, on *Evotomys*, and Fairbanks, on *Microtus*, July 1937, 7 ♂♂, 3 ♀♀. The two specimens recorded by me, *l.c.*, belong to this subspecies, the sketch I made of the genitalia of the specimen in the collection of the U.S. National Museum agreeing with the fresh material sent by Dr. Parker. I have adopted the name proposed for the new subspecies by Mr. Wm. L. Jellison.

Chaetotaxy as in European specimens, the number of bristles being variable : on metepimerum from 7 to 12, on tergite VIII of ♂ from stigma downwards 20 to 33, of which 3 to 6 are subventral in one or two vertical rows.

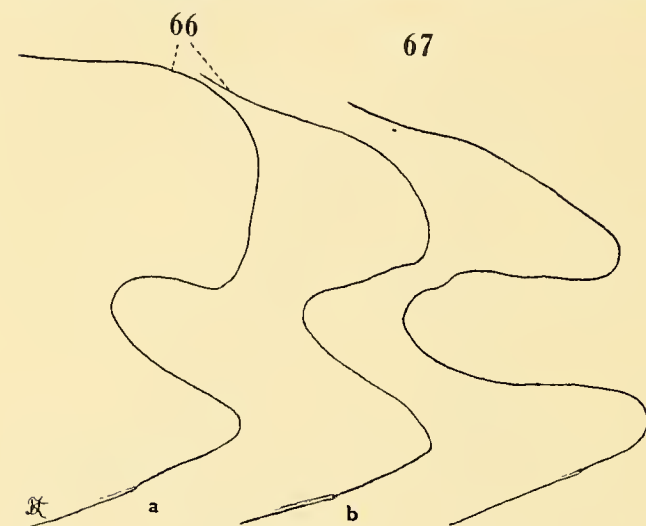
Modified Segments.—♂. Process P of clasper (text-fig. 65) longer than in the Old World races, and the acetabular bristles, of which there are sometimes 3



(as happens occasionally also in European ♂♂), thinner and shorter. Digitoid F as broad as in *M. p. penicilliger* at the widest point, but much longer and therefore appearing slenderer, the dorsal rounded bay between the short pedicel and the main body of F wider than in Old World examples. Proximal, elongate-oblong partition Lo^1 of IX. st. longer and its subspiniform bristle shorter and thinner. Sternum VIII narrower, especially the widened apical portion, and this portion and the widened basal one farther apart, i.e. the narrow median portion longer. Process of paramere (Par) longer and narrower than in *M. p. penicilliger*.—♀. Sternum VII (text-fig. 66 *a* and *b*) deeply sinuate, the upper lobe variable, broad, dorsally rounded.

For comparison I give a figure of sternum VII of a ♀ from Lapland (text-fig. 67), which is *M. p. penicilliger*. One of our Siberian ♀♀ has practically the

same sternum, whereas in others the lobes are shorter. In the specimens from farther south in Scandinavia, the Alps and Great Britain the sinus of sternum VII is shallow, sometimes almost effaced, very rarely deep. The geographical variation in Europe of *M. penicilliger* is now being studied. Apart from the Alps, we have no specimen from France and Germany, which is worthy of note; does the species



occur in the central and northern provinces of these countries? It is common in England.

2. *Monopsyllus exilis* Jordan 1937 (text-figs. 68, 69).

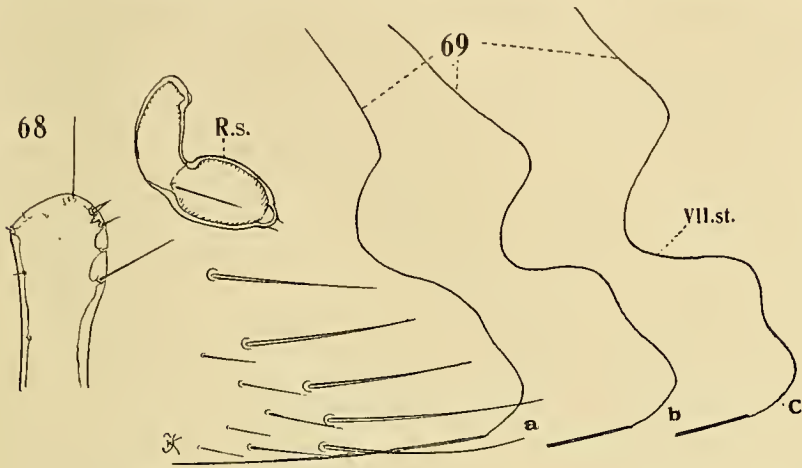
♂ *Megabothris exilis* Jordan, *Nov. Zool.*, xl, p. 264, no. 3, text-fig. 46 (1937) (Montana).

In the two ♂♂ on which the species was based the antepygidial stigma could not clearly be seen, and as at the time I studied the species my mind was much perturbed by Lord Rothschild's illness and the uncertain future of the Tring Museum, I made the mistake, otherwise inexcusable, of placing the species into *Megabothris* instead of *Monopsyllus*, where it belongs, the species being near *M. ciliatus* Baker 1904.

In the single additional ♂ kindly submitted by Messrs. Parker and Jellison the two apical spiniforms of the digitoid F (text-fig. 68) are thinner than in my figure of 1937; each is drawn out into a sharp point, the lower one especially resembling a thin bristle. The subapical thin bristle is longer in this specimen, and sternum VIII bears a few more bristles, there being a row of 4 in proximal two-thirds, and a subapical bristle (each side) as in paratype.

The ♀ is distinguished from *M. ciliatus* by the shape of sternum VII. This segment is sinuate, as it is in *M. ciliatus*, but the lobe above the sinus is short, very broad and rounded, and sometimes projects very little; text-fig. 69, *a*,

b, c, illustrates this variability. Chaetotaxy almost as in *M. ciliatus*. In the Montana ♀♀ there is no inerassation below or in front of the sinus of VII. st. The marginal bristles on inner side of widened area of VIII. t. situated below the



long marginal bristle of the outside are thinner and longer than in *M. ciliatus*. Stylet longer. Spermatheca (R.s.) larger, the tail shorter in proportion to its width. The striae of the basal abdominal sternum of ♀ as deeply curved backwards in middle of side as in *M. ciliatus*, and very close together in apical area.

The Montana specimens were found in a nest of *Spreo tyto* in Beaverland county in June 1937.

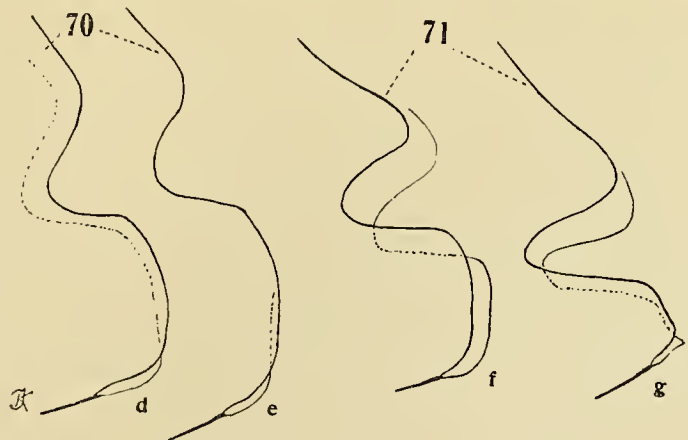
Dr. Parker sent also some specimens from Arizona and Colorado, which are slightly different from the Montana examples and, I think, represent two further local races.

a. M. exilis opadus subsp. nov. (text-fig. 70, *d, e*).

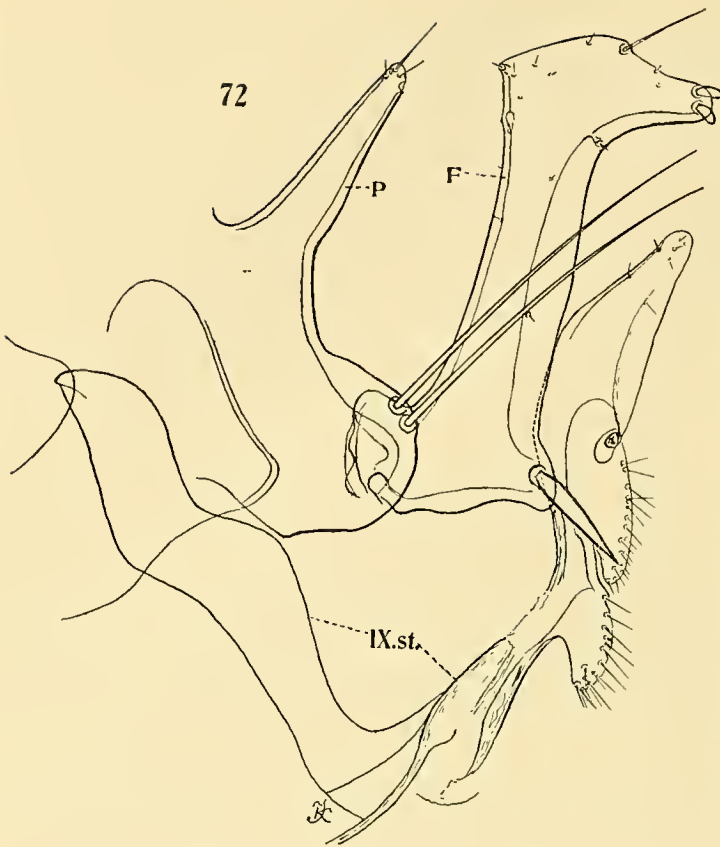
Arizona: Yavapai, April 1937, on *Dipodomys olii* subsp., 1 ♂, 3 ♀♀, and on *Onychomys leucogaster capitulatus*, 1 ♀.

♂♀. In the ♂ sternum VIII is as in our figure of 1937; but distance from lower spiniform to

long marginal bristle below it the same as to marginal bristle above the spiniforms. The lower apical spiniform of digitoid F is narrower and much shorter than the upper, but not thin and bristle-like as in the Montana specimen above described. The vertical arm of sternum IX subapically



more strongly widened than in the 1937 figure. Sternum VII of ♀ (text-fig. 70, *a, b*) with short rounded upper lobe; lower lobe very broad, rounded-truncate, the apical margin vertical, not incurved as in *M. exilis exilis*. Type ♂.



b. *M. exilis triptus* subsp. nov. (text-fig. 71, f, g).

Colorado: Rugger, June 1937, on *Dipodomys* or *Onychomys*, 2 ♀♀.

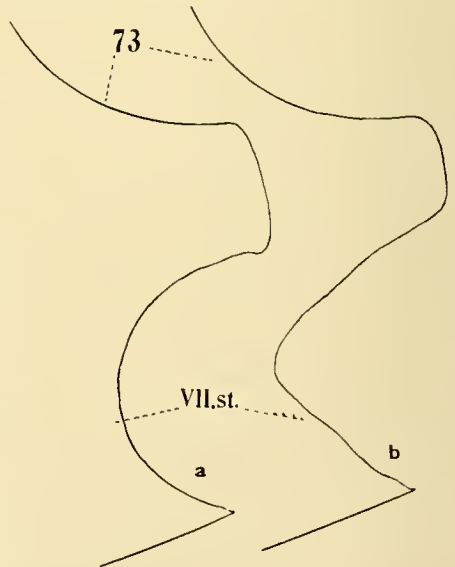
♀. In these two ♀♀, which are somewhat smaller than those from Arizona and Montana, the sinus of VII. st. is deeper and narrower, the upper lobe projecting farther distad; the lower lobe in one specimen nearly as in the Arizona ♀♀, except that it is longer, in the other specimen this lobe is narrow and its short apical margin oblique. Text-fig. 71 g from type.

M. ciliatus is not known to us from Colorado and Arizona; *M. exilis* perhaps takes its place.

3. *Megabothris asio orectus* subsp. nov. (text-figs. 72, 73).

Montana: Ravalli county, October 1935, in nest of a mouse, 2 ♂♂, 2 ♀♀; type ♂.

♂♀. A western subspecies. In the ♂ the apex of the digitoid F more produced backwards than in *M. a. asio* Baker 1904, and the terminal margin between this nose (which resembles that of *Monops. ciliatus*) and the anterior apical angle less rounded; the prominent ventral lobe of sternum IX narrower, and sternum VIII has fewer ventral bristles. In the ♀ the upper lobe of sternum VII is slightly longer than in the specimens from the states of New York and Massachusetts, and the distance of the third or fourth bristle of the posterior row of this segment from the one above it greater.

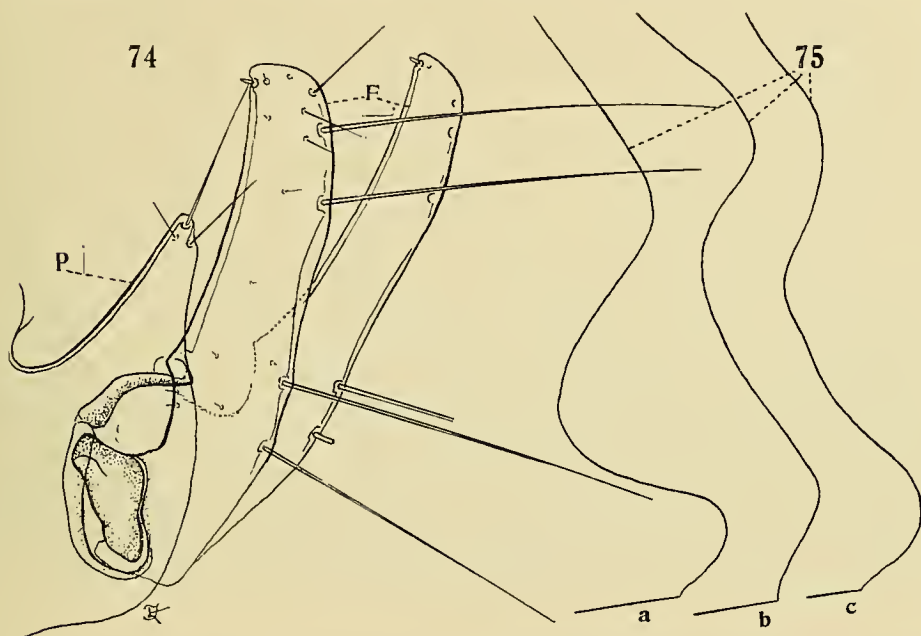


4. *Foxella ignotus ignotus* Baker 1895 (text-figs. 74, 75).

Ceratophyllus ignotus ignotus (Baker 1895), Jordan & Rothschild, *Ectoparasites*, i, p. 55, text-fig. 57 (1915) (♂, type of *Typhl. americana*); Jord., *Nov. Zool.*, xxxv, p. 32, no. 13 (1929 (♂♀)).

Until recently the only specimens of this subspecies which I had seen were Baker's original 2 ♂♂ and 3 ♀♀, from Ames, Iowa. I have now received a fine series of both, very generously sent to me by Mr. C. C. Sanborn and Mr. K. P. Schmidt, of the Field Museum of Natural History, who collected the specimens at Pembroke, Kankakes county, Illinois, on *Geomys bursarius illinoisensis*, and to whom I am very grateful for this kind help.

Sternum VIII of the Illinois ♂♂ agrees with our fig. 57 in *Ectoparasites*, *i.e.*, differing from that of the various other subspecies in the vertical arm meas-



ured from the ventral margin to the tip being as long as the ventral arm measured from the anterior margin to the tip of the apical projection; the variability in the proportions is slight. The long bristle of this segment is always very stout proximally, thicker than in any other subspecies. Proximally of this bristle there are one or two small bristles each side and usually indications of minute hairs. The apex of the basal vertical arm of VIII. st. as slender as in text-fig. 58 of *Ectoparasites*, but curves forward. Process P of clasper varies a little in width and length. As in *F. i. franciscanus* Roths. 1910, it is always¹ shorter than the distance from the angle above the acetabulum to the ventral curve of the acetabulum, whereas in all the other subspecies the process is longer than the vertical diameter of the acetabulum. The digitoid F resembles that of *F. i. recula* J. & R. 1915, from British Columbia; its apex is more rounded in some specimens than in others; the posterior margin is feebly incurved above middle; the width is somewhat variable, and if the digitoid is moved away from P, it appears narrower than if lying vertically along P or partly inside it, as shown in text-fig. 74; the position of the upper long bristle is not quite constant. The

¹ "Always" in a diagnosis means "all the specimens before the author."

paramere is long-nosed, as in *F. i. albertensis* J. & R. 1915. Spicules on dorsal area of inner surface of VIII. t. more conspicuous than in other subspecies.

I mentioned in 1929, *l.c.*, that the sternite VII is deeply incurved in the Iowa ♀♀. In all the Illinois ♀♀ before me the apex of this segment is likewise incurved, but not so deeply in any of them as in our Iowa ♀ (cf. text-fig. 75, *a* from Iowa, *b* and *c* from Illinois); there is a good deal of variability in the Illinois series of ♀♀, the ventral apical lobe projecting much more in some than in others. The bursa copulatrix is as short as in *F. i. recula*. Body of spermatheca either almost globular or ovate.

***Epitedia* gen. nov.**

Like *Catallagia* Roths. 1915, but with genal spines as in *Neopsylla* Wagn. 1903. Differs from the latter genus in the vinculum of basal abdominal sternum being absent, in segment V of fore- and midtarsus bearing 4 lateral pairs of plantar bristles and a proximal ventral pair, whereas this segment of hindtarsus has only the 4 lateral pairs. Body of spermatheca longer than its tail, convex below, concave above, line of demarcation between body and tail distinct above and below, tail deeply projecting into lumen of body. Upper margin of propleurum with sinus where the posterior end of the (internal) vinculum between head and prosternite touches it; this sinus absent in *Neopsylla*. Abdominal terga II to III with two rows of bristles; sternum VIII of ♂ without bristles at and near apical margin. Marginal incassation of metasternum (squamoid, in the membrane closing sternal lumen in front) longer than broad, in *Neopsylla* broader than long or vestigial. The pointed endoskeleton (a fork of which one sees one prong only in lateral aspect; the fork supports the chain of ganglia) of the metasternite is directed straight upward, being placed in between the meral rods, whereas in *Neopsylla* it has a slightly more forward position, being, in mounted specimens, generally more or less directed obliquely upward-forward.—Genotype: *Ctenophthalmus wenmanni* Roths. 1904. Here also belong *Neopsylla faceta* Roths., 1915 and *Neopsylla testor* Roths. 1915.

Neopsylla—*Epitedia*—*Catallagia* are an interesting chain of genera.

***Tamiophila* gen. nov.**

The giant among *Neopsylla* disturbs the diagnosis of the genus and is better segregated from the rather uniform series of species. It agrees in most essentials with *Neopsylla*, but differs in various details, being easily separated by the hairiness of the underside of the basal abdominal sternum. There are but few submarginal bristles on the inner surface of the hindcoxa and no short spiniforms. The patch of very dense striation on the side of the basal abdominal sternum usually very conspicuous in *Neopsylla* (as it is in *Epitedia* and *Catallagia*) indicated by the striation being denser than dorsally, ventrally and anteriorly on the segment, but does not contrast very much. On mid- and hindtibiae 8 dorsal notches, each having a pair of bristles, between sixth and seventh pairs an additional strong dorsal bristle.—Genotype: *Typhlopsylla grandis* Roths. 1900.
